

Evaluating the Prevalence of Small for Gestational Age and Its Associated Risk Factors

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Abstract

Background: Small for gestational age (SGA) fetuses have birth weights below 10th percentile or abdominal circumference less than 10th percentile for gestational age

Objectives: This study aimed to determine the prevalence of SGA and its associated risk factors in Iran.

Patients and Methods: This is a retrospective study. A total of 341 pregnant women were evaluated in fetal health care clinic of perinatology from January 2013 to January 2014.

Results: Of 312 pregnant women, 33 had SGA fetuses. The average of body mass index (BMI) was lower in SGA group than non-SGA. Pulsatility index has no statistical meaningful between SGA and nonSGA groups. In Gestational age had no difference between 2 groups. Severe SGA (< 3rd centile estimated fetal weight) was observed in 2.6% of all cases.

Conclusions: In conclusion, the prevalence of SGA was approximately one tenth of all pregnancies. SGA incidence was associated with nulliparity and more frequently seen in lower age group.

Keywords: SGA, Pregnancy, Fetuses

1. Background

Intrauterine growth restriction (IUGR) refers to fetuses who fail to reach their normal weight. Fetuses with weight less than 2500 g are likely to be IUGR (1, 2). Small for gestational age (SGA) refers to fetuses that are smaller in weight than normal for the same gestational age. It is usually defined as weight or abdominal circumference less than 10th percentile for gestational age. Most SGA fetuses are not pathologically growth restricted, in fact, they are naturally small. Therefore, there is difference between fetuses that are growth restricted and fetuses that are naturally small but healthy (3-5). Of all fetuses less than 10th percentile growth, approximately 40% are at high risk of preventable prenatal death, 40% are healthy small, and 20% are naturally small due to chromosomal or environmental reasons (6). On average, one third of newborns with low weight at birth are reported to experience SGA. This includes 8% in developed countries and 6% - 30% in developing countries. In most cases, maternal health plays a key role. All SGA fetuses should be evaluated and clinically managed regarding FTT (failure to thrive), hypoglycemia, and other conditions, including DGE (delay gastric emptying), SLP (speech-language pathology) and so on (7, 8).

2. Objectives

Considering the importance of mentioned facts it is worthwhile to estimate the prevalence and risk factors of SGA, also to prevent this condition and improve the health of the fetus.

3. Patients and Methods

3.1. Study Design

The research was a retrospective study from January 2013 to January 2014. Healthy pregnant women aged between 21 and 41 years were evaluated in Fetal Health Care Clinic of Perinatology (n = 341). This study examined the prevalence and risk factors of SGA. The checklist comprised age, BMI, parity, pregnancy status (IVF or normal), pulsatility index (PI) of umbilical cord, weight and abdominal circumference (AC) with exclusion of multiple pregnancy and other medical conditions like diabetes and hypertension.

3.2. Statistical Analyses

The SPSS version 20 was used to conduct descriptive analysis, independent sample t test, and Chi-square test. Significance level was considered at less than 0.05.

4. Results

Of all pregnant women (n = 312) presented in our fetal health care clinic, 33 (10.6%) cases had SGA fetuses. Also, the statistically significant difference between groups was not regarding BMI. Of SGA fetus 10.7% had BMI < 25 and 8.3% had BMI more than 25 with no significant difference between two groups. Overall, of 312 participants, 64 (20.5%) had BMI less than 25 Kg/m² and 64 (20.5%) had BMI above 25 Kg/m² and the remainder were missing. In SGA group 10.7% had BMI less than 25 Kg/m² and 8.3% had BMI above Kg/m² and there was no significant relationship between BMI and SGA. The higher proportion of participants (88.1) was at range of 20 - 40 years for maternal age and in SGA group 19 (59%) were less than 30 years old and 13 (41%) were more than 30 years old. It shows that SGA is more in younger patients but there was no significant relationship between age and SGA (P = 0.178). The proportion of patients in SGA group with no parity 8 (24%), multipara 2 (6%) and the remainder were missing. It shows that SGA were more seen in nulipara but did not reveal any significant difference (P = 0.149) there was no significant difference between SGA group and non-SGA group regarding umbilical artery PI (P = 0.458). Of 33 SGA fetuses, 8 (24.2%) suffered from severe SGA. In sever SGA 2 (25%) had umbilical artery PI in range of 6-50 percentile and this figure in moderate SGA was (47%). In none of moderate or sever SGA umbilical artery PI was more than 95 percentile.

5. Discussion

In total, 312 pregnant women were recruited in our study. Of those, 33 (10.6%) cases had SGA fetuses (8 (24%) was severe), which is almost one-tenth of pregnancies. This finding is similar to the work of Vik et al. (9) with SGA prevalence of 10% in Norway. This rate is rarely higher in societies with lower socioeconomic status and also overcrowded societies (10).

However, as shown in Table 1, 15% of women with SGA fetuses had BMI above 25 kg/m². Therefore, maternal BMI > 25 kg/m² is not a risk factor for having SGA fetuses. Gemma et al. (11) have demonstrated that fetal weight disorders and at risk conditions such as SGA are associated with high BMI. In addition, high BMI can be a risk factor of more advanced genetic disorders in fetuses.

In our study, gestational age did not differ significantly between women with and without SGA fetuses.

In the present study, although most cases of SGA were occurred in low parity pregnancies; there was no significant relationship between parity and SGA.

In conclusion, the prevalence of SGA was approximately one tenth of all pregnancies. SGA incidence was not

Table 1. Characteristics of SGA and non-SGA Groups

Variables	SGA Pregnancies	Non-SGA Pregnancies	P Value
Frequency of Mild SGA	25 (8%)	279 (89%)	
Frequency of Severe SGA	8 (2.6%)	279 (89%)	
BMI > 25	5 (8.3%)	55 (91.7%)	
BMI < 25	6 (10.7%)	58 (89.3%)	
Parity			0.3
0	8 (9.5%)	76 (90.5%)	
Multipara	2 (3.2%)	61 (96.8%)	
Pulsatility Index of Umbilical Artery	1.01 ± 0.14	1.12 ± 0.1	< 0.0001
PI; 6-50 centile	12	23	
PI; 51-94	15	39	

significantly associated with maternal BMI > 25 kg/m², and umbilical artery PI.

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